UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

THE CONNECTICUT YANKEE ATOMIC POWER COMPANY

DOCKET NO. 50-213

HADDAM NECK PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 39
License No. DPR-61

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Connecticut Yankee Atomic Power Company (the licensee) dated October 16, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and

paragraph 2.C.(2) of Facility Operating License No. DPR-61 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 39 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis M. Crutchfield

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Attachment:
Changes to the Technical Specifications

Date of Issuance: June 22, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 39

FACILITY OPERATING LICENSE NO. DPR-61

DOCKET NO. 50-213

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Delete Page	Insert Page
3-4a	3-4a
3-4b	3-4b
-	3-4c
3-23	3-23
3-24	3-24*
-	3-24a

*No changes involved; merely included for pagination purposes

(1) With one relief train inoperable, either restore that train within 7 days, or depressurize and vent the RCS through a minimum 3 inch diameter or equivalent opening within the next 8 hours; maintain the RCS in a vented condition until both relief trains have been restored to operable status.

(2) With both relief trains inoperable, depressurize and vent the RCS through a minimum 3 inch diameter opening within 8 hours; maintain the RCS in a vented condition until both relief trains have been restored to operable status.

(3) A 30 day report shall be prepared and submitted to the Commission if either actions (1) or (2) are used to mitigate inoperability of one or both relief trains.

F. Whenever the reactor is in Mode 3 the following conditions shall be met:

1. At least two of the reactor coolant loops listed below shall be OPERABLE:

   a. Reactor Coolant Loop (1) and its associated steam generator and reactor coolant pump,

   b. Reactor Coolant Loop (2) and its associated steam generator and reactor coolant pump,

   c. Reactor Coolant Loop (3) and its associated steam generator and reactor coolant pump,

   d. Reactor Coolant Loop (4) and its associated steam generator and reactor coolant pump.

2. At least one of the above coolant loops shall be in operation.

   a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

   b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

G. Whenever the reactor is in Mode 4 or 5 the following conditions shall be met:

1. At least two of the coolant loops listed below shall be OPERABLE:

   a. Reactor Coolant Loop (1) and its associated steam generator and reactor coolant pump,

b. Reactor Coolant Loop (2) and its associated steam generator and reactor coolant pump,

c. Reactor Coolant Loop (3) and its associated steam generator and reactor coolant pump,

d. Reactor Coolant Loop (4) and its associated steam generator and reactor coolant pump,

e. Residual Heat Removal Loop (A)**

f. Residual Heat Removal Loop (B)**

2. At least one of the above coolant loops shall be in operation.***

a. With less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within 20 hours.

b. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

**The normal or emergency power source may be inoperable in MODE 5.

***All reactor coolant pumps and decay heat removal pumps may be de-energized for up to 1 hour provided 1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and 2) core outlet temperature is maintained at least 10°F below saturation temperature.

Basis: Each of the pressurizer code safety valves is designed to relieve 240,000 lbs per hr. of saturated steam at the valve set point. They are described more fully in FDSA Section 5.2.2. Below 375°F and 350 psig in the reactor coolant system, the residual heat removal system can remove decay heat and thereby control system temperature and pressure. If no decay heat were removed by any of the means available, the amount of steam which could be generated at safety valve relief pressure would be less than half the valves' capacity. One valve therefore provides adequate defense against over-pressurization.

When the boron concentration of the reactor coolant system is to be changed, the process must be uniform to prevent sudden reactivity changes in the reactor. Mixing of the reactor coolant will be sufficient to maintain a uniform boron concentration if at least one reactor coolant pump or one residual heat removal pump is running while the change is taking place. The residual heat removal pump will circulate the primary system volume in approximately one-half hour.

All pressurizer code safety valves are to be in service prior to criticality to permit the design relieving flow to occur if required.

Part C of the specification requires that a sufficient number of reactor coolant pumps be operating to provide core cooling in the event loss of flow occurs. The flow provided in each case will keep DNB well above 1.30 as discussed in FDSA Section 10.3.2. Therefore, cladding damage release of fission products to the reactor coolant cannot occur.

By limiting the temperature differential between the primary and secondary sides to twenty (20) degrees in Part D, the resulting pressure transient will be prevented by the RCS OPS (See Reference 1) from exceeding the limits in Specification 3.4.

As described in Reference (1), the RCS OPS, in conjunction with administrative controls, prevents exceeding the temperature and pressure limits in Specification 3.4 while RCS temperature is under 340°F. Considerations have been incorporated to provide for the inoperability of one or more relief trains (relief valve, motor operated isolation valve, and associated instrumentation) when the RCS OPS is required to be operable.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODES 4 and 5, a single reactor coolant loop or RHR loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires two RHR loops to be OPERABLE.

The operation of one Reactor Coolant Pump or one RHR pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reduction will, therefore, be within the capability of operator recognition and control.

Reference (1) D. C. Switzer letter to A. Schwencer, dated September 7, 1977.

3.13 REFUELING

Applicability: Applies to operating limitations during refueling operations.

Objective: To insure that no incident could occur during refueling operations that would affect public health and safety.

Specification:

A. Radiation levels in the containment and fuel storage building shall be monitored continuously.

B. Core subcritical neutron flux shall be continuously monitored by at least two neutron monitors, each with continuous visual and audible indication available, whenever core geometry is being changed. When core geometry is not being changed, at least one neutron flux monitor shall be in service.

C. (1) Whenever the water level in the refueling cavity is less than 23 feet above the flange of the reactor pressure vessel, two residual heat removal loops shall be OPERABLE. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

Also, with less than the required depth of water described above, suspend all operations involving movement of fuel assemblies or control rods within the reactor pressure vessel.

(2) At least one RHR pump and heat exchanger shall be in operation except that the residual heat removal system may be removed from operation for up to 1 hour per 8 hour period during performance of core alterations in the vicinity of the reactor pressure vessel hot legs. With less than one residual heat removal pump and heat exchanger in operation except as described above, suspend all operation involving any increase in reactor decay heat load or a reduction in boron concentration of the reactor coolant system. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

D. During reactor vessel head removal and while loading and unloading fuel from the reactor, the boron concentration shall be maintained at not less than that required to shut down the core to a k_{eff} - 0.92 (see Specification 3.11).

E. One charging pump capable of injecting borated water to the reactor coolant shall be available at all times when changes in core geometry are taking place.

F. Whenever new fuel is added to the reactor core, a 1/M plot shall be maintained to verify the subcriticality of the core.

G. Direct communication between the control room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.

H. Spent fuel casks shall not be handled above the spent fuel pool or its edge except as provided in Section 3.13.I, until such time as NRC has received and approved the spent fuel cask drop evaluation.

I. After April 23, 1980, a spent fuel cask may be brought into the spent fuel building and may be moved into or over the spent fuel pool a total of ten times in order to remove fuel from the pool for study at an off-site laboratory, or to return the fuel from the laboratory to the pool. Movement of the spent fuel cask under the provisions of this paragraph is conditioned on compliance (by the licensee) with all commitments made by the licensee in its letters to the NRC dated April 18, 1980 and April 23, 1980. In addition, all fuel within the spent fuel pool shall have decayed for at least 90 days before a spent fuel cask is handled above the pool.

Basis: The equipment and general procedures to be utilized during refueling are discussed in the Facility Description and Safety Analysis. Detailed instructions will be available for use by refueling personnel. These instructions, the above-specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. Whenever no change is being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels (A above) and neutron flux provides immediate indication of an unsafe condition. The residual heat pump is used to maintain a uniform boron concentration. The shutdown margin indicated in Part D will keep the core subcritical, even if all control rods were withdrawn from the core. Weekly checks of refueling water boron concentration insure the proper shutdown margin. Part G allows the control room operator to inform the manipular operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

The requirement that at least one residual heat removal pump and heat exchanger be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR pumps and heat exchangers operable when there is less than 23 feet of water above the reactor pressure vessel flange ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain water in the reactor pressure vessel below 140°F as required during refueling mode and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification and (3) that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly.

References:

(1) FDSA Section 5.2.9

(2) FDSA Section 7.4